

## Capital Renewal and Deferred Maintenance

APPA Facilities Institute  
September 2023

Steve Kraal  
Senior Associate Vice President (retired)  
Campus Planning and Facilities Management  
The University of Texas at Austin



1

---

---

---

---

---

---

---

---

## Getting Started or Maintaining Progress

Focus will be on Capital Renewal/Total Cost of Ownership, however...

- What do you think will be, or is your biggest, challenge to starting or maintaining a CR/TOC program?



2

---

---

---

---

---

---

---

---

## Program Infrastructure



3

---

---

---

---

---

---

---

---

## [ Stewardship ]

“The careful and responsible management of something entrusted to one's care”

### Positive Traits

- Innovation
- Inclusive
- Team Player
- Communication

### Not So Positive

- Status Quo
- Ownership
- Exclusive
- Control



4

4

---

---

---

---

---

---

---

---

---

---

## [ Stewardship – Risk Factors ]

- Building Age Profile
- First cost vs. durability
- Absence of life cycle funding
- Competing institutional priorities
- Changing Climate



5

5

---

---

---

---

---

---

---

---

---

---

## [ Stewardship - Managing Risk ]

### Roles and Responsibilities

#### **The Institution**

- What comprises risk
- Acceptable levels of risk
- Resources provided for mitigation

#### **Facilities Management**

- Identify and communicate facility risks
- Outline solutions and costs
- Insure effective implementation



6

6

---

---

---

---

---

---

---

---

---

---

## Stewardship Effective Use of Funding

### Opportunities

- ❖ Improvement in Facility Condition
- ❖ Outside inspections
- ❖ Reduction in operational expenditures



7

---

---

---

---

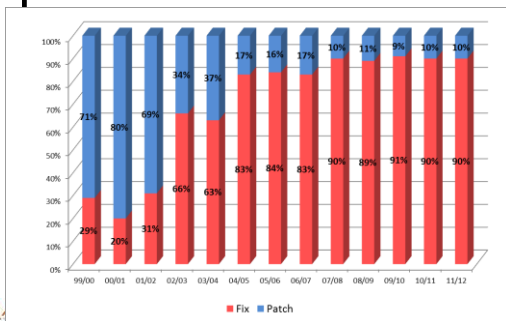
---

---

---

---

## Performance Metrics Effective Use of Funding



8

---

---

---

---

---

---

---

---

## Communication

Your stakeholders include:

- Academic/Research Faculty
- Students
- Finance/Budget Office
- Governing Board
  - Institutional
  - State-wide
- Facilities staff



9

---

---

---

---

---

---

---

---

## Stakeholders

Possible Areas of Nonalignment

- Risk Tolerance
- Risk Factors
- Time Frame – long vs short
- ROI/Financial Impact
- Tolerance for Interruptions



10

10

---

---

---

---

---

---

---

---

## Communication Strategies

- Be consistent in the message
- Use terms and definitions that make sense to your institution
- Focus on specific audiences
- Identify how they benefit
- Keep it simple, bumper sticker
- BE PATIENT



11

11

---

---

---

---

---

---

---

---

## Data

- The infrastructure of your program
- Quality determined by validity and reliability
- The importance of skepticism



12

12

---

---

---

---

---

---

---

---

## Data and Analysis

Data → Information → Knowledge → Wisdom

- Ask questions, beginning with you and your organization
- Find out what questions your stakeholders have
- Use the data that you have before gathering more
- Take advantage of the Pareto Principle (80/20 rule)



13

13

---

---

---

---

---

---

---

---

## Data and Analysis

Where can you get data?

- ✓ Building inventory
- ✓ Annual Financial Report
- ✓ Institutional Studies
- ✓ Campus History
- ✓ Floor Plans
- ✓ Design and Construction records



14

14

---

---

---

---

---

---

---

---

## Useful Starting Points

- What don't you know, or wish you knew more, about your facilities?
- What do you know that your campus would find useful?
- What do you and your stakeholders need to understand better?



15

15

---

---

---

---

---

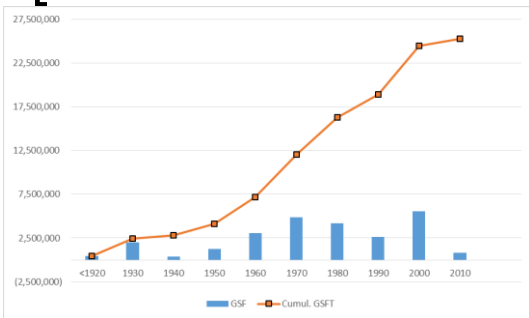
---

---

---

## Getting Started

A Journey of 1000 miles begins with...



16

---

---

---

---

---

---

---

---

---

---

## Assessing Capital Renewal Needs

- Three basic approaches all based on **Replacement value**:
- "Rule of Thumb" – based on a percentage of replacement value(not capital investment), primarily a funding model. **This is not depreciation**
  - Predictive modeling – determination of future funding requirements based on building system life primarily a statistical analysis
  - Condition or Deficiency-Based – comprehensive physical inspection performed on regular cycles, identifying building system functionality and cost



17

17

---

---

---

---

---

---

---

---

---

---

## Comparison of Construction and Replacement Value

- UT Austin E&G Space = 10.5M GSF
  - Construction Value = \$790M
  - Replacement Value = \$1.8B
- Main Building/Tower(1932) = 353,000 GSF
  - Construction Value = \$8.6M
  - Replacement Value = \$96.8M



18

18

---

---

---

---

---

---

---

---

---

---

## Replacement Value

Possible Methods of Calculation:

- ❖ apply historical cost factor to original construction cost (ENR, inflation)
- ❖ find a comparable new facility and use same \$/sf
- ❖ use insured value
- ❖ develop cost model based on cost of building components



19

19

---

---

---

---

---

---

---

---

## Condition Index

CR/DM Requirements  
Replacement Value

Example:

\$100 Million

\$1 Billion Replacement Value

= .10 FCI



20

20

---

---

---

---

---

---

---

---

## Condition Index Clarified

- It is a ratio of reinvestment need vs. current replacement cost
- It's not an indicator of operational capability
- Value as an institutional performance metric
- It may be an indicator of risk



21

21

---

---

---

---

---

---

---

---

## Comparison of Approaches

University of Texas at Austin  
Cost to maintain current facility condition

Approach	Outcome (\$ per year -50 yrs)
Rule of Thumb at 2.5%	\$55M
Condition Assessment	\$45M
Predictive Life Cycle	\$50M



22

22

## Lessons Learned

- Be skeptical, validate your data and analysis
- Start small, employ the Pareto Principle (80/20 rule)
- Don't drive using your mirrors, what's ahead is more important
- Develop organizational empathy



23

23

## Building and Maintaining A Successful Program

- Credibility
- Stewardship
- Communication
- Prepare for Success



24

24



## Capital Renewal and Deferred Maintenance

Questions, Comments, Observations

Sign-in Sheet & Evaluations



25

25

## Overview

This topic is related to four APPA initiatives

- Total Cost of Ownership (TCO)
- Informatics (D-I-K-W)
- Facility Performance Indicators (FPI)
- Body of Knowledge (BOK)



26

26

## Resources

Stewardship

- ◆ <https://waywardjourney.com/2014/08/13/are-you-a-good-steward-or-a-bad-steward/>

Building Systems

- ◆ <https://arc-solutions.org/wp-content/uploads/2012/03/Charette-Marshall-1999-UNIFORMAT-II-Elemental-Classification....pdf>



27

27

## Resources

### Informatics

- <https://www.appa.org/wp-content/uploads/2019/04/20160630APPACFacilitiesInformaticsMaturityMatrixTechnicalReport-4.pdf>

### Facility Performance Indicators

- <https://www.appa.org/facilities-performance-indicators-fpi/>



28

28

---

---

---

---

---

---

---

---

---

---

## Resources

### Body of Knowledge

- <http://appa.org/BOK/index.cfm>

### Total Cost of Ownership

- <https://www.appa.org/facilities-manager/an-introduction-to-total-cost-of-ownership/>



29

29

---

---

---

---

---

---

---

---

---

---

## Resources (APPA Bookstore)

### Campus Investment Package

- Strategic Capital Development: The New Model for Campus Investment
- Buildings...The Gifts That Keep on Taking: A Framework for Integrated Decision Making
- Planning & Managing the Campus Facilities Portfolio
- Charting a New Course for Campus Renewal (PDF)
- The Facilities Audit: A Process for Improving Facilities Conditions



30

30

---

---

---

---

---

---

---

---

---

---

## Resources (APPA Bookstore)

- 1996 Foundation to Uphold
- 1998 Charting a New Course for Campus Renewal
- The Decaying American Campus: A Ticking Time Bomb



31

---

---

---

---

---

---

---

---